

REMARKS

Compliance With Sequence Rules (37 C.F.R. § 1.821(a)(1) and (a)(2)):

In paragraph 5 of the Office Action, the Examiner alleges that the application fails to fully comply with 37 CFR 1.821 through 1.825 and refers in particular to Figures 3A, 3C, 5B, and to specification paragraphs [0115], [0123], [0125] and [0130].

In response, paragraphs [0028], [0030] and [0032] of the Brief Description of the Figures relating to Figures 3A, 3C and 5B respectively are amended (as contemplated by MPEP 2422.02) to refer to existing SEQ ID NOS. New sequences are added to the Sequence Listing as follows: the sequence of GrsA_Adomain in Figure 3A is added as new SEQ ID NO: 35; sequences of Mb, Mt, Sv, Mx and Bs in Figure 3C are added as new SEQ ID NOS: 36 to 40; sequence of pfam00067 in Figure 5B was assigned SEQ ID NO: 43. While Figure 5A was not objected to by the Examiner, paragraph [0032] is further amended to provide a SEQ ID NO for the ORF 10 reference and the sequences of pfam00753 and 1SML are added to the Sequence Listing as new SEQ ID NO: 41 and 42. The 5 amino acid peptide referred to by the Examiner was not found in Figure 5B. The 7 amino acid sequence in paragraph [0115] is added to the Sequence Listing as new SEQ ID NO: 44.

The Examiner considers that reference in paragraph [0123] to NEQK, NHQK, NDEQ, QHRK, MILV, MILF, STNK, STPA, SGND, SNDEQK, NDEQHK, NEQHRK and FVLIM represent short peptides. However, these are not strings of amino acids but rather alternative amino acids for a given position. Accordingly, paragraph [0123] of the specification is amended for clarification, *e.g.* reference to NEQK is amended to read N, E, Q or K, to emphasize the variability. Paragraph [0123] is further amended to correct the expression "ORF 11 (SEQ ID NO:12)" to read --ORF 10 (SEQ ID NO:11)-- as it is clearly illustrated in Figure 5 and the description of Figure 5.

The Examiner considers the iron-binding motif in paragraph [0125] to require a SEQ ID NO. However, the motif does not represent a sequence of four contiguous amino acids.

Amendments to the Drawings:

The attached sheets of drawing for Figures 2A and 2C correct a typographical error wherein “L-HPG” should read –CHPG--. The attached sheets replaces original sheets for Figures 2A and 2C respectively.

The Iron-binding motif described as “[FW]-[SGNH]-x-[GD]-x-[RHPT]-x-C-[LIVMFAP]-[GAD]”, representing alternatives for six non-contiguous amino acid positions wherein “x” is not necessary one amino acid, but rather a gap in the motif. For example, in the case of the iron binding motif represented by residues 423 to 430 of SEQ ID NO: 11, the first “x”, and one of the second or third “x” are absent. Applicant submits that the motif may be excluded from the Sequence Listing under 37 C.F.R 1.821 and 1.822.

Paragraph [0125] is amended to correct a typographical error in position [RHPT] which should read --[RKHTP]-- as described in Hofmann *et al.* which is referred to in paragraph [0125] and incorporated by reference.

The two PCR primers referred to in paragraph [0130] are added to the Sequence Listing as SEQ ID NOs: 45 and 46 and paragraph [0130] is amended accordingly.

The new Sequence Listing is submitted under 37 CFR 1.825 by way of a separate paper filed herewith and the description is amended to identify the sequences as described above.

Objections to the Specification:

The title is amended as suggested by the Examiner in paragraph 7 of the Office Action.

The abstract is amended as suggested by the Examiner in paragraph 8 of the Office Action.

Figure 2C is amended as directed by the Examiner in paragraph 9 of the Office Action to correct a typographical error wherein the component of the ring between D-Ala and L-HAsn should be referred to as “GHPG”. The Examiner is thanked for her assistance in this matter. The second page of Figure 2A is also amended at the top of the last sequence (Module 8) to correct the same typographical error. Support for this correction may be found at least in paragraph [005] as noted by the Examiner.

In response to objections raised in paragraph 10 of the Office Action, paragraph [0030] is amended to delete reference to “Du *et al*, 2000”, paragraph [0080] is amended to correct reference to “Grim” to read –Grimm-- and to correct reference to “Woon” to read --Huang *et al.*--, paragraph [0124] is amended to provide full citation to Ullah *et al.* and Bateman *et al.*, and paragraph [0125] is amended to provide full citation to Bateman *et al.* and to “Hoffman *et al.*”. The full citation to Ullah *et al.*, and Bateman *et al.* is found in paragraph [0032] as originally filed, although there was a typographical error in paragraph [0032] in the word “Bateman”, which is now corrected. Applicant submits that the full citation to “Hoffman *et al.*” is not new matter as it would be readily available to a person skilled in the art given the context of the passage which provides the author’s name, date of publication, specific sequence motif disclosed, and website from which the reference is available, *i.e.* “the Prosite motif PS00086 (Hoffman *et al.*, 1999) required for binding iron: [FW]-[SGNH]-x-[GD]-x-[RHPT]-x-C-[LIVMFAP]-[GAD], where x is...”.

The Table 2 (pages 35-41) is amended as directed by the Examiner in paragraph 11 to label the first column, insert as second column reference to corresponding SEQ ID NOS, and amino acid residue numbers in regard to ORF 3 and ORF 33 to agree with paragraph [0040].

Paragraph [0012] of the specification is amended to insert the word “five” in the expression “five or more” which the Examiner acknowledges in paragraph 12 of the Office Action to be supported by the specification.

Objections to the Claims:

The Examiner alleges in paragraph 13 of the Office Action that former claims 25, 26, and 31-34 contain non-elected subject matter. Applicant has amended the claims to withdraw all non-elected subject matter.

The Examiner alleges in paragraph 14 of the Office Action that former claims 25, 26, 31-33, 37, 43 and 44 contain improper Markush groups. Amended claim 25 and 31-34 no longer recite multiple ORFs, amended claim 26 no longer recites a Markush group of domains, and former claim 37 is cancelled. Claims 34, 43 and 44 are dependent upon amended claims that no longer recite Markush groups. Each element of the Markush group of former claim 26 is covered by distinct claims, namely claim 26 (amended) and new claims 46-48.

The Examiner alleges in paragraph 15 of the Office Action that former claims 26, 29, 31-34 and 37 do not further limit the subject matter of a previous claim. Amended claim 26 and new claims 46-48 are directed to a selection of the domains recited in claim 25, as amended. Claim 29 is cancelled. Claims 31-34 are amended as suggested by the Examiner. Claim 37 is cancelled.

The Examiner objects to claim 40 for depending from an objected claim. The dependency of claim 40 is amended to depend from claim 25. Claim 25 is amended to address the Examiner's objections as described above.

The Examiner alleges in paragraph 16 of the Office Action that claims 29 and 42 are indefinite. Claim 29 is cancelled and claim 42 is amended to depend on claim 25 as amended.

The Examiner alleges that sequence ranges recited in claims 31 and 32 are not supported by the description. In claim 31, the range of 1-470 for SEQ ID NO: 15 is amended to agree with the range of 1-486 described in page 43 of the description. In claim 32 the range of 7296-8380 of SEQ ID NO: 15 is amended to agree with the range of 7926-8380 described on page 43.

The method of claim 45, which the Examiner acknowledges may be subject to rejoinder, is amended to reflect scope of the election.

New claims:

New claims 46-59 relate to the elected subject matter or to methods subject to rejoinder. New claims 46-48 find support at least in Table 3 as originally filed and in former claim 26. New claims 49-52 find support at least in Table 3, paragraph [0040] and the Sequence Listing as originally filed. New claims 53-58 find support at least in Table 3, and Section 2 (starting at page 17) of the specification as originally filed. New claims 56-58 are methods of using the nucleic acids of the invention which applicant understands are subject to rejoinder if product claims are found allowable. New claim 59 is related to deposited cosmids containing domains of SEQ ID NO: 15. New claim 59 finds support at least in paragraph [0036] of the specification.

It is believed that the present claims are in condition for allowance and early notice to that effect is respectfully solicited.

Respectfully submitted,



Ywe J. Looper
Reg. No. 43758

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ECOPIA BIOSCIENCES INC.
7290 Frederick-Banting
Saint-Laurent (Quebec) H4S 2A1
Canada
Tel.: (514) 336-2700
Fax: (514) 336-8827
Customer No. 30198